REMARKS/ARGUMENTS

Applicants respectfully request reconsideration of the prior art rejections set forth by the Examiner under 35 U.S.C. sections 102 and 103. Applicants respectfully submit that the prior art references of record, whether considered alone, or in combination, fail to either teach or suggest Applicants' presently claimed invention.

More specifically, Applicants note that the present invention is directed to overcoming the shortcomings and the deficiencies of the prior art related to color mis-registration problem which occurs most significantly when a paper transport speed is altered during a printing operation. It has previously been proposed to solve the problem of color mis-registration by providing a soft roller and a hard roller for the purpose of attenuating shock caused when the printer paper leaves the so-called nip point. See, for example, page 6 in the final three paragraphs of the instant specification.

It has also been previously proposed to provide a normally unused nozzle in addition to nozzles that are normally used for printing in order to correct color mis-registration with ink that is sprayed from the unused nozzle. The acknowledged techniques proposed in the published unexamined patent applications noted on pages 6 and 7 of the instant application cannot be used in a so-called line-head liquid spraying apparatus. See, for example, page 7 of the instant specification in the first full paragraph.

Accordingly, the inventors of the instant application have discovered new systems and methods for overcoming the shortcomings and deficiencies of the prior art particularly related to the problem of color mis-registration which occurs when a paper transport speed is altered during the printing process. In order to overcome the shortcomings and deficiencies of the prior art related to color mis-registration which occurs when the paper transport speed is altered during the printing operation, Applicants have described systems and methods which selectively alter printing characteristic data that is used in controlling the printing mechanism so that ink is ejected in a desired pattern to achieve printing without color mis-registration. Advantageously, the printing characteristic data for the different paper transport speeds depends upon environmental conditions.

Therefore, in accordance with the systems and methods of the present invention, upon the detection of the change in the print paper transport speed, printing characteristic data that is used in controlling the printing mechanism is changed and the changed values for the printing characteristic data is also selected depending upon certain environmental characteristics.

Fundamentally, Applicants note that the prior art references cited by the Examiner fail to provide any teaching or suggestion whatsoever regarding changing the printing characteristic data that is used in controlling the printing mechanism based upon a detected change in a print paper transport speed. More specifically, Applicants note that the Estelle reference is merely directed to systems and methods for monitoring a fluid dispensing system for dispensing flowable material such as

adhesives, sealants caulks and the like onto a substrate. Most significantly, in comparing the Estelle reference with the claimed invention, the Examiner has asserted that the claimed carrying-speed discriminating mechanism corresponds to the conveyor motion sensor 34 described in the Estelle reference. Significantly, however, there is neither disclosure nor any suggestion that detected changes in transport speed should be used in altering ejection characteristics.

Applicants note that the Examiner has asserted that the Estelle reference teaches "when the carrying-speed discriminating means has determined that the object carrying speed has been changed, the liquid spraying control means controlling the liquid spraying means on the basis of the liquid-spring control data stored in the storage means to spray the droplets from the nozzles in different timing from that which is before the carrying speed is changed. The Examiner has referenced paragraph 23 of the Estelle reference in support of this assertion. (See the first partial paragraph on page 3 of the Examiners action.

A review of this paragraph and the remaining paragraphs in this prior art reference confirms that there is simply no disclosure whatsoever regarding changing ejection control based upon a detected change in speed. Rather, this paragraph merely describes controlling a glue gun or a ejecting mechanism such that it is turned on and off based upon detection of leading and trailing edges. Applicants respectfully submit that the Examiner has failed to properly address this key element of the invention which provides the basis for altering the ink ejecting data.

Furthermore, Applicants respectfully submit that the Estelle reference is not a proper prior art reference because it is not directed to the problem that is addressed by Applicants in the instant application. Accordingly, this reference is not analogous and should not be used as a basis for rejecting the claims.

The Examiner also recognizes additional deficiencies of the Estelle reference and particularly notes that Estelle does not disclose or suggest an environment detecting mechanism for detecting an ambient temperature and/or humidity when droplets are sprayed from the nozzles. Applicants note that the Examiner then relies upon a further reference for overcoming the shortcomings and deficiencies of the primary Estelle reference. Significantly, however, as noted above, the Examiner has failed to properly address each and every element of the claimed invention.

Accordingly, in light of the foregoing, Applicants respectfully submit the prior art references cited by the Examiner fails to teach or suggest a claim subject matter and specifically note that the references failed to provide any teaching or suggestion whatsoever regarding detecting a speed change in altering printing characteristics based on the detected speed change.

In order to highlight these distinctions, Applicants have modified each of the independent claims to reflect these substantial differences. More specifically, independent claim one, for example, has been amended to now specify that:

"the liquid-spraying controlling means controlling the liquid-spraying means when the carrying-speed discriminating means has determined that the object carrying speed has been changed to

alter currently used liquid-spraying control data on the basis of the environment data detected by the environment detecting means to spray the droplets from the nozzles at a different timing from that which is before the carrying speed is changed."

Applicants respectfully submit that these modifications highlight the distinctions between the present invention of the prior art. Accordingly, in light of the foregoing, Applicants respectfully submit that all claims now stand in condition for allowance.

The Commissioner is hereby authorized to charge any fees due or to credit any overpayment to Deposit Account No. 50-3891.

Respectfully submitted

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